

## REMARKS

Claims 1, 3-7, and 9-11 are pending in the application. New claims 10 and 11 have been introduced. Support for the new claims can be found in claims 2 and 4 as originally filed and throughout the specification. No new matter has been added by virtue of the amendments made to the claims.

Figures 7, 11, 12, and 13 have been amended as suggested by the Examiner. Replacement sheets in which the symbols indicating exponential by ("E-09") have been replaced with base ten exponentials ( $10^9$ ) were presented in the amendment after final action submitted on September 20, 2004. Applicants request entry of the amendments to the drawings as previously presented. No new matter has been introduced by the instant amendments.

The present invention provides optical data recording medium which are resistant to deformation (e.g., warp) due to changes in humidity levels. Thus, the present invention provides optical data recording media which is resistant to warpage or deformation induced by changes in relative humidity. More particularly, the present invention provides optical data recording media in which the expansion coefficient under humidity of the protective film and the transparent substrate are regulated to prevent a bending force that can induce a warp or bend in the medium.

None of the prior art references alone or in combination teach or suggest preventing humidity induced warpage of an optical data recording medium which comprises a transparent substrate, a thin film layer formed on the transparent substrate and a protective film formed on the thin film layer wherein the protective film is composed of a resin. The thin film layer is a single layered or multilayered film having one or more layers selected from a dielectric film, a recording film and a reflective film. The expansion coefficient under humidity of the protective film is greater than that of the transparent substrate and the expansion coefficient under humidity of the protective film is less than  $1.7 \times 10^{-4}$  (1/%). The term "expansion coefficient under humidity" is defined in claim 1 to be the [ratio of expansion (1/%) where a difference of relative humidity (vapor content/saturated vapor amount at 25°C) is increased by 1%].

None of the references relied upon by the office action teach or suggest an optical data recording medium which possesses an expansion coefficient under humidity of the protective film is greater than that of the transparent substrate, each of which is less than  $1.7 \times 10^{-4}$  (1%).

Claims 1, 3-7, and 9 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Tajima (JP 2000-311381).

The rejection is traversed.

The office action asserts that the embodiments recited in Table 5 of Tajima satisfy the limitations of the instantly claimed invention. Applicants respectfully disagree. Table 5 of the Tajima reference recites film thickness, Young's Modulus, Linear Expansion Coefficient and Moisture Permeation Degree. Tajima neither discloses nor suggests a substrate film or a protective film of an optical recording media which has an expansion coefficient under humidity of less than  $1.7 \times 10^{-4}$  (1%). Moreover, Tajima does not teach or suggest preventing humidity induced warpage or deformation by controlling the magnitude and ratio of the expansion coefficient under humidity of the protective layer or the transparent substrate.

The office action of May 20, 2004 has reasserted the argument that

“the humidity expansion coefficient is an inherent property of the material and that the protective layer of the prior art cited inherently meets this limitation.” And

“The examiner notes the materials disclosed in the instant application urethane, epoxy, polyester and polyether acrylates are disclosed as useful and meeting the material limitation of the claims in the instant specification...”

As the rejection is understood, the Examiner appears to take the position that all urethane, epoxy, polyester and polyether acrylates which can be used in optical recording media inherently possess expansion coefficient under humidity values specified in claim 1 of the instant application. Moreover, the Office Action appears to aver that because warping or tilting in the optical recording media is bad, that any prior art optical recording media which is designed to

prevent warp or tilt caused by any stimulus automatically must also satisfy the claim limitations of the instant application.

Applicants respectfully disagree.

The Office Action has not provided any extrinsic evidence that the missing descriptive matter is necessarily present in the optical recording media of Tajima or that its presence would be so recognized by persons of ordinary skill. See, MPEP §2131.01, Heading III citing *Continental Can Co. USA v. Monsanto Co.* 20 USPQ2d 1746 (Fed. Cir. 1991). The mere assertion that warpage is “bad” is an insufficient basis to establish that all materials used to form optical media inherently possess a desirable physical property.

The claimed invention provides that the material of the protective layer has an expansion coefficient under humidity value greater than that of the transparent substrate and that the expansion coefficient under humidity of the protective layer is less than  $1.7 \times 10^{-4}$  (1/%). Moreover, as provided by the specification optical data recording media which satisfy the above requirements are particularly resistant to deformation or warpage caused by changes in relative humidity.

Although Applicants agree that urethane, epoxy, polyester or polyether acrylate materials are useful in the present invention, Applicant further required that each material used in the protective layer or the transparent substrate possess expansion coefficient under humidity values recited in claim 1. Thus, the instant invention contemplates fabrication of the transparent substrate and protective layer from materials such as urethane, epoxy, polyester or polyether acrylate materials (or polyolefin, polycarbonate, or other suitable material) which possess the requisite expansion coefficient under humidity specified in claim 1.

The parameter “expansion coefficient under humidity” is a parameter that is independently variable from moisture permeation degree ( $\text{g/m}^2 \cdot \text{day}$ ) and the water absorption (%). The specification particularly points out the intended meaning of “expansion coefficient

under humidity” at page 5, lines 22-24, such that the expansion coefficient under humidity parameter is completely different from moisture permeation degree, and water permeability.

In contrast, Tajima recites optical recording media which are resistant to thermal deformation or warpage and optical recording media which having physical properties tailored to preventing warpage caused by heat. Tajima neither teaches nor suggests that materials used in the transparent substrate or the protective layer should possess any particular expansion coefficient under humidity or that regulating the magnitude and ratio of the expansion coefficients under humidity for the transparent substrate and the protective layer would provide a desirable effect. Thus, there can be no presumption that the materials recited for use in Tajima inherently satisfy the limitations of claim 1 of the instant invention, that is the transparent substrate and protective layer of Tajima do not inherent possess expansion coefficients under humidity which satisfy the language of claim 1 of the instant application.

For at least the reasons presented herein, claim 1, as originally presented, is patentable over the Tajima document.

Thus claims 1 and 7 are patentable over Tajima. Claims 3-6 and 9 depend from either claim 1 or claim 7 and are therefore also patentable over Tajima.

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Murakami (U.S. Patent 5,452,272).

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Inuoue (U.S. Patent 4,590,493).

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Ohta (U.S. Patent 5,453,884).

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Yokoyama (U.S. Patent 5,714,222).

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Yoshioka (U.S. Patent 5,674,649).

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Tachibana (U.S. Patent 5,102,709).

Each of the rejections is traversed. The cited documents do not teach or suggest Applicants' claimed invention in a manner sufficient to sustain a rejection under 35 U.S.C. §102 or §103.

As the office action is understood, each of the cited documents is relied upon because they allegedly teach an optical recording medium which uses a substrate and/or protective layer composed of an urethane, epoxy, polyester or polyether acrylate. Moreover, the Examiner has averred that because these documents teach optical recording medium which uses a substrate and/or protective layer composed of an urethane, epoxy, polyester or polyether acrylate they inherently satisfy the limitations of claim 1 regarding the expansion coefficient under humidity for the protective layer and the transparent substrate.

For at least the reasons discussed *supra* with regard to Tajima, claims 1, 3, 4, and 6 are patentable over the cited documents.

More particularly, none of the cited documents, taken alone or in any combination, teach or suggest optical recording media which are resistant to deformation or warpage induced by changes in relative humidity. Moreover, none of the cited documents teach or suggest that the materials used in the fabrication of the optical recording media should be selected to have low expansion coefficients under humidity or that the expansion coefficient for the protective layer should be greater than that of the transparent substrate.

No evidence has been presented to show or establish that the protective layers or transparent substrates of the optical recording media of the cited art necessarily possess specified expansion coefficients under humidity as provided by claim 1.

Moreover, none of the cited documents, taken alone or in combination teach or suggest optical recording media in which the substrate or protective layer has an expansion coefficient under humidity of less than  $1.7 \times 10^{-4}$  (1/%). Furthermore, none of the cited documents, taken alone or in combination, teach or suggest optical recording media in which the expansion coefficient under humidity of the protective film is greater than that of the transparent substrate.

Accordingly, each of the rejections is properly withdrawn.

Thus, for at least the reasons discussed herein, claim 1 is patentable over each of the cited documents taken alone or in combination. Claims 3, 4 and 6 depend from claim 1 and are therefore also patentable over any combination of the cited documents.


Reconsideration and allowance of claims 1, 3, 4, and 6 is respectfully requested in view of the foregoing discussion. This case is believed to be in condition for immediate allowance. Applicant respectfully requests early consideration and allowance of the subject application.

If for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**.

Should the Examiner wish to discuss any of the amendments and/or remarks made herein, the undersigned agent would appreciate the opportunity to do so.

Respectfully submitted,

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**Amendments to the drawings:**

Replacement sheets (three sheets) of drawings including changes to FIGS. 7 and 11-13 were filed with the amendment after final action dated September 20, 2004. In FIGS. 7 and 11-13, the exponential ("E-x") has been replaced by superscripts ( $10^x$ ).